



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,093	09/09/2003	Ravi F. Saraf	YOR909980228US4	9830

30678 7590 09/07/2005

CONNOLLY BOVE LODGE & HUTZ LLP
SUITE 800
1990 M STREET NW
WASHINGTON, DC 20036-3425

EXAMINER

WILDER, CYNTHIA B

ART UNIT	PAPER NUMBER
----------	--------------

1637

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/657,093

Applicant(s)

SARAF ET AL.

Examiner

Cynthia B. Wilder, Ph.D.

Art Unit

1637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 59-61, 63, 64, 66-83 and 85-112 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 59, 60, 76, 77, 79, 80, 82, 83, 85-98, 100-107, 109, 111 and 112 is/are allowed.
- 6) ☒ Claim(s) 61, 63, 64, 66, 69, 78, 81, 87, 91-94, 108 and 110 is/are rejected.
- 7) ☒ Claim(s) 67, 68, 70-75 and 99 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restriction

1. Applicant's preliminary amendment filed on 9/9/2003 obviates the restriction requirement mailed on June 14, 2005. Claims 1-59, 62, 65 and 84 have been canceled. Claims 59-61, 64, 66-69, 72, 77, 78, 79, and 83 have been amended. Claims 85-112 have been added. Claims 59-61, 63-64, 66-83 and 85-112 are pending and discussed in this Office action.

Objections

2. The disclosure and claim 99 are objected to because of the following informalities:

(a) The specification at page 8, lines 22, 24 and page 14, line 26 are objected to for the unit of measurement, "ím". It is not clear if this unit corresponds to "µm".

3. (b) Claim 99 is objected to because the specification at page 8, line 22, recites the unit of measurement as "ím" not "µm" as recited in the claim. It is not clear if the unit "ím" corresponds to "µm".

Appropriate correction is required.

Claim Rejections - 35 USC § 112: New Matter Rejection

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 61, 63, 64, 66, 91-94 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the

Art Unit: 1637

relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitations filed by amendment comprising "first linker nucleic acid" and "second linker nucleic acid" as recited in the claims 61, 63, 64, 66 and 91-94 is not supported by the specification as filed. Nowhere in the specification is there a recitation of a linker nucleic acid molecule. The specification at page 26, lines 15-22, discuss that an "anchoring molecule may be attached to the electrodes". However, the specification leads one to assume that these structures are "bridging DNA" (see page 26 and 27). There is no recitation anywhere in the specification which recites or suggests or implies "a first linker" and "second linker" as described in the claims 61, 63, 64, 66, 91-94. Based on the lack of support of the instant invention as recited in the claims 61, 63, 64, 66, 91-94 the specification would not have suggested to the skill artisan that the applicant was in possession of the claimed invention as of the filing date of the application.

6. Claim 69 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitations filed by amendment comprising "wherein the DNA in said R-loop includes at least one region pair-bonded with said RNA and at least one non-bonding region free of pair bonds" is not supported by the specification as filed. Nowhere in the specification is there a recitation of "regions of pair-bonds" associated with DNA in the R-Loop. The specification at page 18 and 19, discuss that the DNA association with the R-Loop. The specification teaches at

Art Unit: 1637

page 18 "at least one nucleotide may be attached to a nanoparticle". "The at least one nucleotide attached to the nanoparticle typically is complementary to at least one nucleotide within the R-Loop of the DNA molecule on the portion of the R-Loop not attached to the RNA molecule". There is no recitation on those pages, which recites or implies the limitations as recited in claim 69. Based on the lack of support of the instant invention as recited in the claim 69 the specification would not have suggested to the skill artisan that the applicant was in possession of the claimed invention as of the filing date of the application.

7. Claim 87 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitations filed by amendment comprising "wherein said bridging DNA is λ -DNA" is not found in the specification as filed. Nowhere in the specification is there a recitation of a " λ -DNA". The specification at page 15, line 1 recites "wherein the DNA is λ -DNA". The specification however does not limit this DNA to the bridging DNA. Based on the lack of support of the instant invention as recited in the claim 87 the specification would not have suggested to the skill artisan that the applicant was in possession of the claimed invention as of the filing date of the application.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 78, 81, 108 and 110 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claim 64 is indefinite because it depends from a canceled claim (claim 62).

(b) Claims 78, 81, 108 and 110 is indefinite and unclear at "OR gate" and "AND gate" because neither the specification nor claims provide a limiting definition for the abbreviations "OR" and "AND" in reference to "a gate". Thus, a meaningful interpretation of the limitations as it relates to the claims cannot be ascertained.

Conclusion

10. Claims 61, 63, 64, 66, 69, 78, 81, 87, 91-94, 108 and 110 have been rejected. Claim 99 is objected. Claims 67 68, 70-75 are objected because they depend from rejected claims. No prior art have been applied against these claims. Claims 59, 60, 76-77, 79-80, 82-83, 85-86, 88-90, 95-98, 100-107, 109, 111 and 112 contain allowable subject matter and have not been objected or rejected because no prior art was found teaching or suggesting a method for fabricating a nano-electronic device which comprises an association of electrodes on a substrate with complementary biomolecules (RNA and DNA) which forms an R-Loops and bonding a nanoparticle to DNA within at least one of the R-Loop. No motivation could be found in the art for association R-loops of nucleic acid molecules with an electronic nano-structure.

Art Unit: 1637

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia B. Wilder, Ph.D. whose telephone number is (571) 272-0791. The examiner works a flexible schedule and can be reached by phone and voice mail. Alternatively, a request for a return telephone call may be emailed to cynthia.wilder@uspto.gov. Since email communications may not be secure, it is suggested that information in such request be limited to name, phone number, and the best time to return the call.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (571) 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Cynthia Wilder
CYNTHIA WILDER
PATENT EXAMINER
9/2/2005